AMRAD NEWSLETTER

Amateur Radio Research and Development Corporation March 1983

March 7 Meeting

Terry Fox, WB4JFI will give a short tutorial on the AX.25 packet radio protocol. The meeting is 7:30-9:00 P.M. at the Patrick Henry Library, 101 Maple Ave E (VA Rte 123), Vienna, VA.

April 4 Meeting

Terry Fox and Paul Rinaldo will review the West Coast Computer Faire and Second ARRL Packet Conference held in San Francisco, March 18-20.

May 16 Meeting

Hal Feinstein, WB3KDU will talk on local-area networks.

Paul Rinaldo, W4RI is Relocating to Newington, CT

I have accepted an appointment as Manager of the ARRL Technical Department replacing Doug DeMaw, W1FB. The move will take place around the May 7, 1983. Of course, it's with mixed emotions. I'm pleased to have the opportunity with the League. But, leaving the Washington, DC area and the AMRAD gang here is the down side.

Having had my office at home during the past few years has made it possible for me to put in quite a few hours each week on AMRAD matters, including the newsletter. So, AMRAD will need some more volunteers to handle a number of things.

Certainly, the biggest single job to be done is the newsletter. It has taken about 20 manhours per month. I'll be taking care of the next (April) issue. There will not be a May issue -- Bill Pala will produce a 1983 AMRAD Membership Directory. Then, starting with the June issue, Terry Fox will take over as Editor. He won't be able to spend anywhere as much time as I have on the newsletter, so he will need some help. If you can write, edit, proofread, prepare camera-ready copy, etc, please get in touch with Terry, ASAP, 364-3869 (weekdays), 356-8334 (eves/weekends). I'll be in touch with our regular contributors to see what they can do to minimize the editing chore. The goal is to get all material either camera ready, via modem, or via 8-in., single-sided, single-density floppy disks. (We don't have a current need for someone to handle the membership data base or mailing labels as Bill Pala is on top of this. The newsletter is printed, bundled and mailed commercially, so we're all set there, too.)

There is an immediate need for a volunteer in the Northern Virginia area to handle member requests for EPROM burning. Talk to Terry or Dave Borden, K8MMO who have been doing some.

Information for Second ARRL Packet Conference

The following hotel is recommended for out-of-town packeteers attending the March 19, 1983 ARRL Packet Radio Conference: Holiday Inn/Civic Center, 50 Eighth St., San Francisco, CA, 415-626-6103 An alternate selection which is close by: Carriage Inn (Best Western), 140 Seventh St., San Francisco, CA, 415-552-8600.

Both of these hotels are within waking distance of the Civic Center, and prices for rooms are in the sixty dollar range. The Computer Faire has reserved a large block of rooms at these hotels, and the simplest way to confirm your reservation is to send a letter (or the form in the back of the Silicon Gulch Gazette) to: Computer Faire Housing Bureau, San Francisco Convention & Visitors Bureau, P.O. Box 5612, San Francisco, CA 94101, 415-974-6900.

They will be able to book rooms until 5 days before the Faire (the February 17th deadline in the Gazette is incorrect) at which time the rates expire and the space reverts to the hotels' control. Reservations are valid until 6 P.M. unless you have called the hotel with your credit card number. Write your reservation letter today, because these rooms are going fast. There were 30 rooms available as of February 17th. You can call the hotel direct, but the rate may be 10-15% higher. Call the hotel direct for cancellations or any changes.

After arriving at SFO Airport, take an Airporter Bus marked "Knob Hill - Financial District Express" and ask to be let off at the Americania. Fare will be $4.00. Regular taxi fare is about $24.00 from the airport.

The San Francisco Radio Club has agreed to cohost the meeting and is offering the services of its repeater W6PW (144.55/145.15) to all packeteers. If you need help or information, place a call on that machine.

The schedule for the meeting includes these special events:

3/18	9 A.M.-6 P.M.	Faire meetings and exhibits
3/18	7 P.M.- ?	Dinner for speakers and ARRL Digital Committee members
3/19	9 A.M.-6 P.M.	Packet Conference
3/19	Noon-1 P.M.	Informal Luncheon at Salmagundi's Restaurant
3/19	7 P.M. +	No formal plans - on your own
3/20	9 A.M.	Breakfast at Zim's Restaurant
3/20	10 A.M.-Noon	ARRL Digital Committee Meeting

In addition to the ARRL Conference, Hank Magnuski and Paul Rinaldo will be speaking on Packet Radio during regular Faire sessions. As of this date the exact times of these presentations have not been confirmed.

Preregistration special rates expire March 7th. I should have your check for $19 (Faire registration plus conference proceedings) in hand no later than March 1st, or you may not be able to get the special rate.

If you want more information about the Faire, call or write Faire HQ and ask to be sent a copy of the Silicon Gulch Gazette: Computer Faire, 345 Swett Road, Woodside, CA 94062, 415-851-7077.

Hope to see you in March - Hank Magnuski, KA6M.

PROTOCOL

David W. Borden, K8MMO
Rte 2, Box 233B
Sterling, VA 22170
703-450-5284

Beta Testing

Beta testing of two major packet activities has commenced. Beta testing implies that a large number of users test the hardware/software or both and attempt to find bugs. Once bugs are found, a report to the test coordinator describes the bug which can then be corrected.

About 80 Tucson Amateur Packet Radio (TAPR) TNC boards have been shipped to various test sites (St. Louis, Chicago, Los Angeles, San Diego, Massachusetts, Phoenix, Minnesota and Tucson). The TNC manual (160 pages) has been released. Now begins the task of checking the software for correctness, not an easy task since the board does so much. Any errors will no doubt be spotted quickly with so many testers.

Beta testing of the Hank Magnuski, KA6M software for the Vancouver board has also begun in San Francsico and Washington. This software implements all of the new protocol but the DM, FRAME REJECT, REJ and BROADCAST packets. It has several documented known problems which will be fixed. Terry Fox, WB4JFI has modified the AMRAD Vancouver TNC Repeater to handle the new protocol and testing of it has begun. It appears to work well and Washington is shifting over to the new protocol resulting in lots of EPROM burning. It appears that the Vancouver board will not die after all and may not even require a memory upgrade as Hank's new code fits in 4k of EPROM. AMRAD will be passing out Beta test proms to known Washington area packeteers at the Vienna Winterfest. If you do not know you are getting PROMSs, contact Terry Fox, WB4JFI if you wish to participate. Speed is not promised.

Bill Danielson, N6FQR has modified the VADCG board to be downloadable. He has changed the memory space to 16k of RAM usable for program or data. Current software runs as is after being downloaded. He has changed the 2708 EPROM and the 2114 RAM to 2716 EPROM and 6116 RAM. Data is downloaded in Intel HEX format and after downloading, the RAM and EPROM switch places. It looks like a good modification to make if you want to test new Vancouver software.

Preframe Sync

In our Vancouver software, one of the features of the 8273 protocol controller chip used is preframe sync where two octets (bytes) of bit reversals (0101010101010101) are sent ahead of the initial flag of a frame. Paul Rinaldo, W4RI has been doing a lot of work in that area since the 8273 chip does this, but the 1933 chip used by TAPR and the KA6M repeater does not. This becomes an issue on hf and marginal vhf/uhf circuits where we have less-than-ideal conditions and we need a method for synchronous modems to sync up. Paul will be writing more on this in the future as he has stirred up other people to generate thoughts on the issue. To review this issue so you may argue with Paul about it if you want, preframe sync is used most frequently in SDLC loop configurations where secondaries get their clocks from received data (RxD). The 16 signal transistions allow the Digital Phase Lock Loop (DPLL) to lock up by the time the first flag character is received. More modern thinking does not use preframe sync since the DPLL is supposed to lock up on the flag on your nice quiet coaxial cable. On hf radio, we have a noisy line indeed. Maybe we can put our protocol chips into data transparent mode (like we use for cw i-d) and send two or more bytes of reversals on hf.

PACKET RADIO TREASURE TROVE

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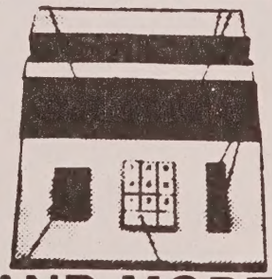

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47 CFR Part 97

[PR Docket No. 83-28; FCC 83-23]

Establishment of a Class of Operator License Not Requiring a Demonstration of Proficiency in the International Morse Code

AGENCY: Federal Communications Commission.

ACTION: Proposed rule.

SUMMARY: The Commission proposes to amend the Amateur Radio Service Rules to establish a class of operator license which would not require an applicant to first demonstrate proficiency in the international Morse code. The current rules require that applicants for each of the five existing license classes prove that they are able to send and receive texts in the Morse code. However, the Commission is often in receipt of requests to delete or waive this requirement. The proposed rules would establish a license class without the code requirement and limit the privileges of the license to frequencies above 30 MHz—frequencies upon which Morse code is seldom used.

DATE: Comments are due by April 29, 1983 and replies by May 31, 1983.

ADDRESS: Federal Communications Commission, Washington, D.C. 20554.

FOR FURTHER INFORMATION CONTACT: Steve Lett, Private Radio Bureau, Special Services Division, (202) 632-4964.

SUPPLEMENTARY INFORMATION:

List of Subjects in 47 CFR Part 97

Radio.

Notice of Proposed Rule Making

Adopted: January 20, 1983.

Released: February 1, 1983.

In the matter of establishment of a class of amateur operator license not requiring a demonstration of proficiency in the international Morse Code, PR Docket No. 83-28.

Introduction

1. Notice of Proposed Rule Making in the above captioned matter is hereby given.

2. The Commission is proposing to establish an amateur radio operator license class which an individual may obtain without first demonstrating a proficiency in the international Morse code. We are doing this in the belief that there are intelligent, disciplined persons who can make a valuable contribution to the Amateur Radio Service without such a proficiency. These persons may include, but are not limited to, many of our nation's younger, school-aged individuals whose primary interest lies in the burgeoning field of computer technology or individuals with a physical handicap which prevents them from being able to successfully complete a Morse code examination. The license class we propose to establish would be an "entry" type license class which would provide to these individuals the same introduction to amateur radio that the current Novice class license provides. However, instead of requiring a demonstration of proficiency in the Morse code, the proposed license class would require additional testing, above that required of a Novice class license applicant, in the areas of radio theory, operation and practice. In this way, we believe that individuals can prove in an alternative fashion that they have the ability and discipline to make a serious contribution to the Amateur Radio Service.

Background

3. As the amateur community is aware, the issue of a "codeless" amateur operator license has been addressed in past Commission proceedings. On December 4, 1974 the Commission adopted a Notice of Proposed Rule Making in Docket 20282 that dealt comprehensively with the Amateur Radio Service Rules concerning operator classes, privileges and requirements.[1] In that Notice, the Commission said:

> We recognize the desire by some amateurs, and would be amateurs * * * for a class of amateur operator license having requirements that do not include a knowledge of telegraphy * * *. A survey and analysis conducted in 1971 indicated that there may be as many non-licensees interested in amateur radio activities, if not more, than there are persons already licensed in the Amateur Radio Service. The most often mentioned reason for not obtaining an amateur license is the telegraphy requirements.

The Commission then stated, "We believe, under carefully established provisions, a new 'telephony-only' type of operator license (the 'Communicator class' license), limited to frequencies above 144 MHz, could and should be incorporated into the Amateur Radio Service."

4. On August 8, 1978 the Commission adopted a Notice of Inquiry in General Docket 78-250 concerning the administration of Morse code examinations to handicapped applicants for amateur operator licenses.[2] That Notice contained information about our current examination procedures and sought comments about improvements that could be made in administering Morse code examinations to handicapped applicants. One of the alternatives that was considered in that proceeding was the creation of a new class of amateur operator license which would not have a Morse code examination and which would have an eligibility restricted to handicapped applicants.

5. On March 6, 1979 the Commission adopted a Third Report and Order in Docket 20282 to address matters not disposed of in Commission actions since the adoption of its Notice in that docket.[3] Among these was the issue of a codeless operator license. The Commission stated:

> (W)e have decided to take no action at this time * * * on the creation of a * * * license having no telegraphy privileges or requirements. We firmly believe in the principle, articulated in the Notice, that in any licensing system there should be a logical relationship between the qualification requirements and the operator privileges authorized at each license class level. We feel that the (codeless) "Communicator Class," as proposed, was in keeping with this principle; and we do not agree with the majority filing comments who asserted that the privileges to be conveyed by the "Communicator Class" were "out of proportion" to the qualification requirements. Nevertheless, since much time has elapsed since the issuance of the Notice (4 years) * * * we would like to get the views of * * * newer licensees on the need or desirability of a "codeless" class of amateur license. Accordingly, we hope to revisit this matter later * * * in a new rule making proceeding.

6. On March 11, 1982 the Commission adopted a Report and Order terminating, without action, the proceeding in General Docket 78-250.[4] The Commission stated:

> After careful consideration of the issues and comments in this proceeding, it appears that selecting a particular group of license applicants for favorable treatment in terms of less stringent amateur operator requirements would not be sound licensing policy. For example, if such a policy were instituted, the Commission ultimately could find itself in the untenable position of deciding which applicants actually qualified for telegraphy exemptions and which did not. Commission personnel clearly are not trained to make such judgments. Therefore, if we decide to introduce a class of amateur radio operator license without telegraphy requirements, it will be available to any applicant, instead of limited to applicants with certain physical or learning disabilities.

7. Today, we note that internationally there are at least two countries with significant amateur radio operator populations which provide for a class of operator license which does not require a proficiency in the Morse code: Japan and Canada. In Japan, where the difference in privileges between operator classes is for the most part determined by authorized maximum operating power, license classes are provided for low power operation in the HF as well as VHF bands[5] without a Morse code examination requirement. In Canada, operators holding a Digital Amateur Class Certificate may use virtually all emission types throughout the Canadian amateur frequency bands above 144 MHz. The examination requirements for the Digital Amateur Class Certificate include a test in radio regulations, a test in radio theory and operation of modern amateur radio transmitters and receivers, and a rigorous examination in the theory of communications, computing, and analog and digital transmissions, but no examination in the international Morse code. For each of these cases, we are unaware of any difficulty that has been experienced because of the creation of such license classes.

Proposals

8. The Commission is proposing to establish one of two kinds of codeless operator license class. The first kind would be created by eliminating the five-word-per-minute Morse code examination element from the existing Technician class operator licensing requirements. The operator license to be issued would still be called the "Technician class" license and the privileges would continue to include all authorized amateur privileges above 50 MHz. However, the license would convey the Novice class privileges (Morse telegraphy in portions of certain HF bands)—which are authorized to current Technician class licensees—only after the license holder had successfully completed the additional examination element 1(A) (beginner's code test at five words per minute). The second form that such a license could take would be one similar to the Canadian Digital Amateur Class Certificate. We propose to call this license the "Experimenter class" license, since, as will be explained later, this would more accurately reflect the privileges to be conveyed.

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[1] 39 FR 44042, December 20, 1974.

[2] 43 FR 37729, August 24, 1978.

[3] 44 FR 16460, March 19, 1979.

[4] 47 FR 14197, April 2, 1982.

[5] The HF (High Frequency) bands are the bands between 3 and 30 MHz. The VHF (Very High Frequency) bands are the bands between 30 and 300 MHz.

9. Both of the potential codeless license classes we propose to establish have certain features in common, most notably, the authorized frequencies under consideration. The Commission believes th. requirements for a knowledge of the international Morse code still serve an important purpose for operation on the frequencies below 30 MHz. Furthermore, the United States is a signatory of the treaty established at the 1959 Administrative Radio Conference and that treaty requires that the operator of an amateur radio station using frequencies below 144 MHz must be capable of sending and receiving Morse code signals.[6] At the 1979 World Administrative Radio Conference (WARC) the specification of 144 MHz was changed to 30 MHz and this new limit will apply upon ratification of the new treaty by the United States. Accordingly, the Commission will consider only privileges above 30 MHz for the codeless license class. The specific frequencies above 30 MHz to authorize for such a license class is an issue upon which we encourage comments. Our proposals for frequencies as well as other specific aspects of the two proposed license classes are discussed below.

10. Another common aspect of the two codeless license classes under consideration is that they would both be "entry" type licenses, and, in that respect, be similar to the existing Novice class license. As mentioned earlier, the intention of the entry type license is to provide an individual with an introduction to amateur radio in order that he/she may come to learn more of the art and techniques of radio and become interested in different and varied aspects of the Amateur Radio Service. The license classes we propose to establish would supplement the Novice class license in this regard. They would differ from the Novice class in that instead of requiring the five-word-per-minute code test, the new entry class license would require additional examination in radio theory and practice.

Technician Class License (Without Morse Code Examination)

11. With the elimination of the five-word-per-minute Morse code examination requirement (examination element 1(A)) from the Technician class license the remaining requirements would include examination element 2 (basic law comprising rules and regulations essential to the beginner's operation, including sufficient elementary radio theory for the understanding of those rules) and element 3 (general amateur practice and regulations involving radio operation and apparatus and provisions of treaties, statutes, and rules affecting amateur stations and operators). We note that elements 2 and 3 are also the only examinations in theory, practice and regulations required for the General class operator license—a license which conveys all amateur privileges on frequencies in all amateur frequency bands and which is considered to be a significant credential of an individual's technical competence. In essence, we would be requiring the Technician class licensee to meet all of the requirements of the General class licensee, save for the examination in Morse code. Under these circumstances, we believe that an individual, having obtained a Technician class license under our proposal, would be able to make a worthy contribution to the Amateur Radio Service and that the individual would possess the degree of discipline appropriate to amateur radio.

12. Under our proposal, the privileges for the Technician class license would continue to include operation on all amateur frequencies above 50 MHz since this would be consistent with the current privileges for that license class (with the exception of the Morse telegraphy privileges in the HF bands which would be authorized upon the licensee's successful completion of examination element 1(A)). Such privileges would also be consistent with our international responsibilities. We are also proposing that the privileges include the use of all emission modes currently authorized to amateurs on those frequency bands. Once again this is consistent with the privileges currently authorized to Technician class licensees and is in keeping with our objective of having the proposed license class provide a broad exposure to the Amateur Radio Service and opportunities for experimentation. We believe, for example, that persons whose primary interest lies in the field of computers will take advantage of the emission modes used for radio-teleprinter and computer communications (i.e., A2, F1 and F2 emission modes). In this way they could discover more about radio communications through the converging technologies of amateur radio and personal computers. They would then have an opportunity to go on to learn about other modes such as facsimile (A4 and F5 emissions), television (A5 and F5 emissions) and the Morse code (A1 emissions) in addition to the common voice modes (A3 and F3 emissions).

Experimenter Class License

13. As noted earlier, the requirements for the Canadian Digital Amateur Class Certificate, while not including an examination in the Morse code, do include examinations in radio regulations, radio theory and digital techniques. The examinations in radio regulations and theory are the same as those given to applicants for the Canadian Advanced Amateur Class Certificate which has as its only additional requirement a fifteen-word-per-minute Morse code examination. So, in essence, the applicant for the Digital Class Certificate must pass the same examinations requirements as an applicant for the Advanced Class Certificate except that the Morse code examination is replaced with an extremely difficult examination on digital techniques.

14. In keeping with this model, we propose to create for our Experimenter class license a new examination element—element 5—which would be the sole examination required of the license applicant. The appropriate content for this examination is something which we believe deserves discussion in the comments on this proceeding. Clearly this examination element must test an applicant's knowledge of radio regulations and theory as is required for the Canadian Digital Amateur Class Certificate. However, the *level* at which this examination should test an applicant's knowledge is an issue that we believe should be addressed in the comments. The level of the examination in these areas could be at or between the levels required for any of the five current operator license classes.

15. To be in perfect keeping with the model of the Canadian Digital Class Certificate, the examination required for the Experimenter class license should also test an applicant's knowledge of digital techniques. We note, however, that applicants for the current Technician and Amateur Extra class licenses are also tested in this area. Under these circumstances, and given that an examination in radio regulations and theory should clearly be required for the Experimenter class license applicant, we believe that it may be appropriate for our proposed new examination element 5 to simply be comprised of certain of our existing examination elements. For example, if the new element 5 consisted of the same subject matter as the current elements 2 and 3, the examination requirements for the Experimenter class license would be the same as those for our proposed codeless Technician class license. Alternatively, examination element 5 could, perhaps, consist of the current elements 2, 3 and 4(A). We specifically invite comments as to whether the approach of having element 5 be comprised of certain current examination elements is desirable, and if so which ones, or whether an entirely new examination and syllabus should be developed for it. This also brings us to the first reason that we believe this proposed new license should be called the Experimenter class rather than the Digital class license. Since the examination requirements in the area of digital techniques for the new license would not be unique to that license (unless we were to remove those requirements from other classes of licenses, which we do not plan to do), we believe it would be a misnomer to single that license class out as a "digital" license.

16. The Canadian Digital Amateur Class Certificate conveys all of the privileges accorded to the two other Canadian amateur operator classes on frequencies above 144 MHz, both in terms of authorized frequencies and emission modes. However, it also conveys emission mode privileges which neither of the other two license classes are entitled to use—specifically the use of pulse modulation (type P emissions).

In the U.S., all classes of amateur operator licensees, other than Novice, are authorized full amateur privileges above 50 MHz, including the use of pulse modulation where it is permitted in those bands. Consequently, there are no exclusive mode privileges which we can re e for the Experimenter class licens hout removing certain privile from other license classes. Once again, this is something which we do not plan to do. Consistent with the above, we propose that the Experimenter class license convey all amateur privileges on frequencies above 144 MHz. We are proposing 144 MHz as the lower limit of frequency privileges since this is consistent with that of the Canadian Digital Amateur Class Certificate. However, there is nothing to prevent the authorization of privileges down to 50 MHz and, here again, we plan to be flexible on the issue of

[6] Article 41, Section 3(1) of the Radio Regulations which complete the International Telecommunication Convention (Geneva, 1959) states, "Any person operating the apparatus of an amateur station shall have proved that he is able to send correctly by hand and to receive correctly by ear, texts in Morse code signals. Administrations concerned may, however, waive this requirement in the case of stations making use exclusively of frequencies above 144 MHz."

Tucson Amateur Packet Radio Activities

Lyle Johnson, WA7GXD
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Tucson, AZ 85734

Much has been happening in TAPR, both in Tucson and around the nation. A painful recovery is in progress after "Black Thursday" (when we found that we had to scrap 120 TNCs that had been virtually completed, and at an initial cost of a staggering $8600!), and we are pleased to report that several Beta sites have now received TNCs. About 80 have been delivered as of this writing...9 Feb 83. Most sites report no problems, except for the occasional jammer, and packets are flying.

The first site to come up was in St. Louis, headed by Pete Eaton, WB9FLW, and Bill Reed, WDOETZ. Bill now has an on-the-air CP/M (tm, Digital Research Inc.) bulletin board, and activity is frenzied. This site came up late on Monday night, January 31, 1983, and is believed to be the first packet radio system based on the new AX.25 standard adopted in early October in Washington, D.C. (The TAPR TNC implements this protocol, along with VADCG protocol in the initial software release.)

Since St. Louis, sites in Chicago, Los Angeles, San Diego, Massachusetts, Phoenix, Minnesota and Tucson have had at least partial deliveries of TNCs with most sites already beginning on-the-air testing. Needless to say, the Beta Testers in those areas are quite excited. To the rest of the Beta Testers, we only ask for patience. The effort required to assemble, test and debug 180 TNCs is non-trivial, and a dedicated handful of Tucson locals are putting in long yours to get your boards ready. These hams haven't even been on the air with packet themselves (lest excitement overtake them, and they neglect completion ofthe task at hand).

Along with the boards, which have been interfaced to a number of radios and terminals/personal computers with great success, the TNC manual has been released. This document is over 160 pages (incluing three foldouts) and includes sections on protocol, hardware design, operation, installation, debugging and generally understanding the TNC in particular and packet radio techniques in general. Appendices include a boringly detailed description of the AX.25 protocol as well as the VADCG protocol implemented in software release B.1. The manual will be made available to those who desire them at a reasonable cost (they are included with the TNC, of course).

Many requests are already pouring in for more TNCs, and to these requests we can only reply that Beta Test is a test, and until its completion there will be no further TNCs released. At the time when it is determined that the hardware is sufficiently reliable, and the software adequately debugged, a mechanism will be implkemented to ensure high availability of the TNC, perhaps as a bare board and parts kit. TAPR is not a commercial manufacturer, but rather an R & D group interested in furthering packet radio techniques. Nonetheless, TAPR recognizes a commitment to make this technology freely available (not available for free!) to anyone interested. Please write us at the address above for further information, or, better yet, join. Dues are only $12/year and includes the bi-monthly Packet Status Register newsletter, which contains the latest information on the groups activities nationwide.

Enough soapbox. TAPR held its annual meeting on Saturday, February 5th in Tucson. About 60 people were present, some flying in from as far east as Massachusetts, as far north as Minnesota and as far west as Los Angeles. The national character of the organization, begun by 6 local Tucsonans in late 1981, is unmistakable. This is clearly reflected in the fact that, after balloting by the membership for five new members of the Board of Directors, as well as balloting by the previous Board members for another five members of the Board, the total mix is 8 Tusconans and 7 out-of-state members of TAPR make up the new Board. Some members of the new board reside in the East Coast, some on the West. Out of over 250 members, only about 30 are in Tucson!

At the Board of Directors meeting which followed the annual meeting, a new slate of officers was eleceted to guide the organization as it works to broaden the base of those working on projects within the TAPR framework. The results are summarized below:

President	Lyle Johnson, WA7GXD
Exec V.P.	Den Connors, KD2S
Secretary	Heather Johnson, N7DZU
Treasurer	Chuck Green, NOADI

Many people ask us, "What happens after Beta Test?" The answer to that question was given at the Annual Meeting during the various presentations. TAPR intends to cooperate with, and participate in, the hf linking experiments with AMRAD, the satellite linking via Phase IIIB and PACSAT with AMSAT as well as various LAN support of various TAPR sites. TAPR's primary thrust, however, will be in developing a viable, high-speed, terrestrial linking system, running at perhaps 50 to 500 kbits/s using L-band (1280 MHz). This will require the concerted effort of many people in various locations. If you are interested in helping, please contact us. If you are a participant in Beta Test, expect to be polled by your Beta Coordinator. And don't forget to accept an assignment.

Further, the existing Beta organization is going to become the TAPR Field Organization if all goes well. We simply want to marshall the talents of many people, reduce the workload on those who are having to contend with threats of divorce, or who have forgotten what our children look like (and they us), etc. It can be done, and if the enthusiasm that TAPR has seen up to this point is any indication, it will be done!

AMRAD No-Code License Questionnaire

Please check the boxes indicating the specific privileges (if any) that you would give to a new no-code license.

Band (MHz)	Repeater Operation	Morse	Digital	Phone	Fax/SSTV	FSTV
50-52		☐	☐	☐	☐	
52-54	yes	☐	☐	☐	☐	
144-144.5		☐	☐	☐	☐	
144.5-145.5	yes	☐	☐	☐	☐	
145.5-146		☐	☐	☐	☐	
146-148	yes	☐	☐	☐	☐	
220-220.5		☐	☐	☐	☐	
220.5-225	yes	☐	☐	☐	☐	
420-431	yes	☐	☐	☐	☐	☐
431-433		☐	☐	☐	☐	
433-435	yes	☐	☐	☐	☐	
435-438		☐	☐	☐	☐	
438-450	yes	☐	☐	☐	☐	☐
900 WARC	yes	☐	☐	☐	☐	☐
1215-1300+	yes	☐	☐	☐	☐	☐
- - - - - - - - - - - - - - - - Satellite - - - - - - - - - - - - - - - -						
Mode	Up / Down					
A	145 / 29	☐	☐	☐	☐	
B	435 / 145	☐	☐	☐	☐	
J	145 / 435	☐	☐	☐	☐	
L	1296 / 435	☐	☐	☐	☐	

Remarks: _____

_____

Name and Call (optional) _____

Bring to meeting or mail to 1524 Springvale Ave, McLean, VA 22101

frequencies to authorize to the new codeless license. This also brings us to the second reason that we believe that calling this proposed license the "Digital class" license would be a misnomer. There are no "digital" privileges which we plan to exclusively convey to such a license.

Discussion

17. Essentially, we will be considering the authorization of the same frequencies for whichever codeless license we may implement. There are, then, only two principle differences between our proposed codeless Technician class and Experimenter class operator licenses. These are the subject and level of the written examination to be administered to the applicant, and the total number of operator license classes to be provided for in the Amateur Radio Service. In the case of our codeless Technician class license proposal, that license class would take the place of the current Technician class license and the total number of operator license classes would remain the same. In the case of our Experimenter class license proposal, we would be adding one entirely new class of operator license.[7] In this respect, we must point out that the Technician class license proposal has an advantage over the Experimenter class license proposal. Implementation of the Experimenter class license may require the Commission to develop a new syllabus and provide, by some means, for the preparation and administration of new examinations. It would also certainly require the revision and reprinting of our application forms and other Commission publications as well as a complete revision of our data processing procedures and programs used for issuing licenses. We would be remiss if we did not consider these administrative burdens in weighing the respective desirability of the two license classes proposed. Accordingly, we request that this matter be addressed in the context of comments on this proceeding.

18. Finally, the Commission does not wish to de-emphasize the importance of the international Morse code as a communications mode in the Amateur Radio Service. In the recent proceeding regarding expansion of the HF telephony "subbands" the Commission stated: "Current regulations permit emission type A1 Morse telegraphy operation on all amateur radio frequencies. This unique universal authorization for that mode results from its character as an efficient and widely recognized communications language that can be employed with the simplest type of equipment." [8] We believe that this character has not changed. However, it is precisely these attributes that make us believe that Morse code as a valuable mode of communication "can stand on its own feet." We believe that once an individual has had an opportunity to become involved in the Amateur Radio Service and become acquainted with its many intricate facets, there is a desire to learn more about radio and the offerings of the service. We anticipate that in the case of the codeless class licensees these new interests may include the international Morse code, just as we anticipate with all other licensees that these interests may include radio theory at a greater level of comprehension and Morse code proficiency at a greater speed.

19. Beyond station identification and use in certain weak signal communictions modes, we note that the Morse code is seldom used on frequencies above 50 MHZ, even though all amateur operators are currently required to demonstate their proficiency in it prior to licensing. We then ask why the Federal Government should continue to require of operators a skill which may have less utility than other skills in these bands for which the license would be granted to operate. We do not, for example, require applicants to demonstrate proficiency with a typewriter even though radioteleprinting may be the most efficenct mode for certain "traffic" handling. We believe that a more important qualification for an operator license is an individuals ability to understand the Commission's regulations and the radio station for which he/she is responsible. Other than this, we would leave to the individual the decision as to whether learning the Morse code would benefit his/her endeavors in amateur radio.

Conclusion

20. The Commission is aware that the matter of a codeless license is probably the most controversial matter that we can raise with the amateur radio community. For many amateur radio operators, the Morse code stands as the absolute cornerstone of the service. We have taken note of a survey conducted for the American Radio Relay League, Inc. (ARRL) by Florida State University's Institute for Social Research,[9] which is indicative of these attitudes. Of those U.S.-licensed amateur operators responding, 83% believed that a Morse code requirement is either essential or important for operator privileges below 30 MHz, while 64% believed that such a requirement is essential or important for operator privileges above 30 MHz. We are also aware that many amateur radio licensees believe that our intention with a codeless license will be simply to increase the growth of the Amateur Radio Service. While this would be a likely consequence of the establishment of a codeless class license this, in fact, is not our principle intent. We wish to reiterate that our intention is to enhance, not necessarily enlarge, the Amateur Radio Service. We believe that this can be accomplished by allowing fully-qualified, technically competent individuals, who are not presently part of the amateur fraternity, to make a contribution to the Amateur Radio Service, provided only that the operating privileges they receive are commensurate with the examination material they are required to pass.

21. It has also come to our attention that some of the current amateur licensees are particularly concerned that even if a codeless license class were to convey privileges only in the VHF bands and higher, that those privileges might include certain well populated bands (e.g. the popular 2 meter band). With respect to this, we would like to reemphasize that we plan to be flexible on the issue of frequencies that would be authorized for the codeless license class (in particular the Experimenter class, since we are not considering changes in the privileges for Technican class licensees). We will carefully consider the comments of both amateurs and non-amateurs on this issue and make appropriate adjustments in the frequency bands eventually authorized.

22. Finally, we are in receipt of a letter from the ARRL requesting us to delay for 18 months the issuance of this Notice due to recent developments with respect to the fate of the amateur operator examination program. Public Law 97-259, adopted September 13, 1982, permits the Commission to use volunteers in the examination of candidates for amateur operator licenses. In response to that legislation, the ARRL has filed a petition for rule making, RM-4229, requesting that the Commission's Rules be amended to establish a volunteer examiner program. The ARRL letter states that, "It seems unwise and perhaps unfair to contemplate enlarging the license examination burden by an additional burden of unknown dimensions until the amateur community has responded to the principle challenge involved. . . . The amateur community needs time to absorb the Commission's license examination task before it as a result of PL 97-259 before it contemplates additional license examination assignments from the Commission."

23. While we are completely sympathetic to the burdens invloved with the examination of amateur operator license candidates, we reject the ARRL's request. The ARRL has, in RM-4229, invited upon the amateur community the burden of the operator examination program. Although we recognize and appreciate that there are benefits to be realized by the public from the ARRL's proposal in its petition, the Commission is not forcing this burden upon the amateur community. The Commission has been considering the establishment of a codeless amateur license class for over a decade and we do not believe that any further delay can be warranted.

24. Accordingly, we are moving ahead with this proceeding and anticipate that the amateur community, as well as other interested parties, will carefully and objectively consider our proposals and provide constructive comments to aid us in our final decision on this matter.

25. Notice is hereby given that it is proposed to amend 47 CFR Part 97 in accordance with the proposal set forth in the attached Appendix I or Appendix II.

Procedural Matters

26. Authority for issuance of this Notice is contained in Sections 4(i) and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. 154(i) and 303(r). Pursuant to applicable procedures set forth in § 1.415 of the Commission's Rules, interested persons may file comments on or before April 29, 1983, and reply comments on or before May 31, 1983. All relevant and timely comments will be considered by the Commission before final action is taken in this proceeding. In reaching its decision, the Commission may take into consideration information and ideas not contained in the comments, provided that such information or a writing indicating the nature and source of such information is placed in the public file, and provided that the fact of the Commission's reliance on such

[7] Depending on the final examination requirements and privileges which may be included for the Experimenter class license, the license class structure may dictate that it be permissible for that class of license to be able to be held concurrently with another class of license. This is the case for the Canadian Digital Amateur Class Certificate.

[8] Notice of Inquiry and Proposed Rule Making in PR Docket No. 82-83, 47 FR 8798, March 2, 1982.

[9] The American Radio Relay League, Inc. is an association of amateur radio operators with over 100,000 members who are licensed by the Commission. Information from survey excerpted from "QST" (the official journal of the ARRL), March 1981, pp. 11-18.

information is noted in the Report and Order.

27. In accordance with § 1.419 of the Commission's Rules, 47 CFR 1.419, formal participants must file an original and five copies of their comments and other materials. Participants who wish each Commissioner to have a personal copy of their comments should file an original and eleven copies. Members of the general public who wish to express their interest by participating informally may do so by submitting one copy. All comments are given the same consideration, regardless of the number of copies submitted. Each set of comments must state on its face the proceeding to which it relates (PR Docket Number) and should be submitted to: The Secretary, Federal Communications Commission, Washington, DC 20554. All documents will be available for public inspection during regular business hours in the Commission's Public Reference Room at its headquarters in Washington, D.C.

28. For purposes of this non-restricted notice and comment rule making proceeding, members of the public are advised that *ex parte* contracts are permitted from the time the Commission adopts a Notice of Proposed Rule Making until the time a public notice is issued stating that a substantive disposition of the matter is to be considered at a forthcoming meeting or until a final Order disposing of the matter is adopted by the Commission, whichever is earlier. In general, an *ex parte* presentation is any written or oral communication (other than formal written comments/pleadings and formal oral argument) between a person outside the Commission and a Commissioner or a member of the Commission's staff which addresses the merits of the proceeding. Any person who submits a written *ex parte* presentation must serve a copy of that presentation on the Commission's Secretary for inclusion in the public file. Any person who makes an oral *ex parte* presentation addressing matters not fully covered in any previously-filed written comments for the proceeding must prepare a written summary of that presentation; on the day of oral presentation, that written summary must be served on the Commission's Secretary for inclusion in the public file, with a copy to the Commission official receiving the oral presentation. Each *ex parte* presentation described above must state on its face that the Secretary has been served, and must also state by docket number the proceeding to which it relates. See generally, § 1.1231 of the Commission's rules, 47 CFR 1.1231. A summary of the Commission's procedures governing *ex parte* contacts in informal rule makings is available from the Commission's Consumer Assistance Office, FCC Washington, DC 20554, (202) 632–7000.

29. The Commission has determined that Sections 603 and 604 of the Regulatory Flexibility Act of 1980 (Pub. L. 96–354) do not apply to this rule making proceeding since this proposal would only amend the operator license class structure of the Amateur Radio Service. There would be no significant impact on small businesses, small organizations or small governmental jurisdictions.

30. It is ordered that the Secretary shall cause a copy of this Notice to be served upon the Chief Counsel for Advocacy of the Small Business Administration and that the Secretary shall also cause a copy of this Notice to be published in the Federal Register.

31. For further information on this proceeding, contact Steve Lett, Federal Communications Commission, Private Radio Bureau, Washington, DC 20554, (202) 632–4964.

(Secs. 4, 303, 48 Stat., as amended, 1066, 1082; 47 U.S.C. 154, 303)

Federal Communications Commission.

William J. Tricarico,

Secretary.

Appendix I—Alternative 1

PART 97—[AMENDED]

It is proposed that Part 97 of the Commission's Rules and Regulations, 47 CFR Part 97, be amended as follows:

1. In § 97.7 paragraph (d) would be revised to read as follows:

§ 97.7 Privileges of operator licenses.

* * * * *

(d) Technician Class. All authorized amateur privileges on the frequencies 50.0 MHz and above. Technician Class licenses also convey the full privileges of Novice Class licenses if—

(1) The Technician Class operator license was first obtained prior to [the effective date of the Order in this proceeding]; or

(2) The licensee has been examined by a volunteer examiner meeting the qualifications set forth in § 97.28(b) who has administered Examination Element 1(A) to the Technician Class licensee and has determined that the licensee has successfully completed that element.

* * * * *

2. In § 97.23, paragraph (d) would be revised to read as follow:

§ 97.23 Examination requirements.

(d). Technician Class: Elements 2 and 3;

* * * * *

Appendix II—Alternative 2

It is proposed that Part 97 of the Commission's Rules and Regulations, 47 CFR Part 97, be amended as follows:

1. Section 97.5 would be revised to read as follows:

§ 97.5 Classes of operator licenses.

Amateur extra class.
Advanced class.
General class.
Conditional class.
Technician class.
Novice class.
Experimenter class.

2. In § 97.7, a new paragraph (f) would be added to read as follows:

§ 97.7 Privileges of operator licenses.

* * * * *

(f) Experimenter Class. All authorized amateur privileges on the frequencies 144.0 Mhz and above.

3. In § 97.21, a new paragraph (h) would be added to read as follows:

§ 97.21 Examination elements.

* * * * *

(h) Element 5: Intermediate amateur practice involving intermediate level radio theory and operation as applicable to modern amateur techniques, including, but not limited to, radiotelephony and digital communications.

4. In § 97.23, a new paragraph (f) would be added to read as follows:

§ 97.23 Examination requirements.

* * * * *

(f) Experimenter Class: Element 5.

[FR Doc. 83–2875 Filed 3–2–83; 8:45 am]
BILLING CODE 6712–01–M

THE DEAF AND THE TTY

Barry Strassler, KA3KDF
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301-589-3006 (Voice/TTY)

The EIA and TDD Standards

While I am awaiting feedback from known deaf radio hams on the need to get formally organized and in which format, I wish to shift to another topic.

I have been working closely with the Electronic Industries Association (EIA) on establishing TDD techical standards. Our next meeting will be held in Washington, DC on St. Patrick's Day, March 17. And I have asked two non-Irishmen, Dick Barth and Steve Brenner, to accompany a third non-Irishman, myself, during this meeting. The ASCII-related issues will be addressed in this session.

For years we had struggled with some kine of TDD/TTY performance standards to give the deaf consumer a fair break. But it was easier said than done. It seemed doomed to oblivion until the EIA came to the rescue by expressing interest in this issue. This should have been a breakthrough for all TDD manufacturers to be able to operate on one agreed-on set of standards. But for some reason, not all TDD manufacturers attended each of the four previous EIA meetings. It seemed that the telephone company, communication carrier, government, and telephone supplier representatives outnumbered the TDD manufacturers in their own ball game.

The problem plaguing the TDD manufacturers was lack of uniformity on TDD standards. Perhaps this is the consequence of trying to protect their schematics from the prying eyes of competitors, to the tetriment of the deaf consumer. It is unlike the situation of TV repair shops which are capable of repairing all makes with volumes of schematic diagrams serving as their reference. The TDD manufacturers have refused to share information with other manufacturers, and this has led to as many as three different TDD standards, each thinking that theirs was the "right" one.

One manufacturer went out of business, thinking the deaf were on the ASCII code. Upon learning that it was Baudot, his inventory was rendered useless. Another manufacturer from California insisted that the rest of the California manufacturers "toe" his line, meaning that all TDDs must be compatible with his Electronic Baudot News Message Systems. The end result -- the California-made TDDs are partially incompatible with the TDDs outside California. Because of this, one manufacturer is stuck with a one-year inventory of unsold and incompatible TDDs. And so on.

What were the incompatible specifications? The 1400-Hz mark and 1800-Hz space tones were either frequency-shift keyed or just the space tone on-off keyed with the mark tone ignored except for echo-suppression purposes. The tone level is either -9dBm or 0 dBm. The stop pulse is 1.0, 1.42 or 1.5 bits long.

The ASCII issues might prove to be thorny. The arrangement of features as to originate/answer and full-/half-duplex modes is left to the manufacturer. Thusly, one manufacturer lacks 300-baud capability, while the other manufacturer has its use of the ASCII code predicated on the deaf modem, not on the Bell 103. Should EIA for the sake of protocol require that all TDDs be equipped with automatic tone detection to discrimate ASCII from Baudot? If this is not the case, then when ASCII-only TDDs become prevalent, it will be cumbersome for the average deaf person to pick up the phone, put it in Baudot mode, and if no response then into ASCII mode, and again if no response assume it is a voice call.

Yet, if it is equipped with the automatic detector, then the TDD prices will go up. And high prices are always a sore point with low-income deaf households. One manufacturer, who is extremely sympathetic to the ASCII/Baudot cause, said that of the thousands of TDDs turned out by his plant, only 5 or 6 were for the dual ASCII/Baudot modem option.

AMRAD Amateur Radio Research and Development Corporation

Membership Application/Renewal

Mail to: Dr. William P. Pala, WB4NFB
5829 Parakeet Drive
Burke, VA 22015

See reverse for overseas mailing rates.

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Dues: Regular	$15
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Please make checks payable to AMRAD.

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I agree to support the purposes of the Corporation.

Class License_____ ☐ARRL Member
Interests:
☐Packet Radio ☐Spread Spectrum
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Computer model_____
Microprocessor type_____

*Signature*_____

The Amateur Radio Research and Development Corporation (AMRAD) is a worldwide club of over 500 amateur radio and computer experimenters. It is incorporated in Virginia and is recognized by the U.S. Internal Revenue Service as a tax-exempt scientific and educational organization.

The purposes of AMRAD are to: develop skills and knowledge in radio and electronic technology; advocate design of experimental equipment and techniques; promote basic and applied research; organize technical forums and symposiums; collect and disseminate technical information; and, provide experimental repeaters.

Meetings are on the 1st Monday of each month at 7:30 P.M. at the Patrick Henry Branch Library, 101 Maple Ave E, Vienna, VA. If the first month is a holiday, an alternate date will be announced in the newsletter. Except for the annual meeting in December, meetings are normally reserved for technical talks - not business.

WD4IWG/R is an open repeater for fm voice and digital communications, especially for experimental modes. It is located at Tyson's Corner, McLean, VA. It features semi-private autopatch available to licensed members. Frequencies are: 147.81 MHz in, 147.21 MHz out. The repeater director is Jeff Brennan, WB4WLW.

WB4JFI/R is a 1200-baud half-duplex packet repeater in Falls Church, VA and may be accessed via WD4IWG/R frequencies.

WB5MMB/R is a 1200-baud simplex packet radio repeater which operates on 147.585 MHz from Vienna, VA.

The AMRAD CBBS, 703-734-1387, is operated by Terry Fox, WB4JFI. The system accepts 110, 300, 450 and 600-baud ASCII, Bell 103.

Handicapped Education Exchange, 301-593-7033, is operated by Dick Barth, W3HWN. HEX accepts 110/300-baud ASCII and Baudot deaf TTY/TDD calls.

AMRAD is affiliated with the American Radio Relay League (ARRL), Foundation for Amateur Radio (FAR), Northern Virginia Radio Council (NOVARC) and the Mid Atlantic Repeater Council (T-MARC).

The AMRAD Newsletter is mailed monthly to members and other clubs on an exchange basis. Technical articles, product announcements, news items, and other copy relating to amateur radio and computing are welcome. Honorariums at a rate of $15 per printed page ($20 maximum per author per issue) are paid for original material accepted. Classified ads are free to members. Commercial ad inquiries are invited. The editor reserves the right to reject or edit any portions of the copy. Items should be mailed by the 8th of the preceeding month to Paul Rinaldo, W4RI, 1524 Springvale Ave, McLean, VA 22101. Full permission for reprinting or quoting items is granted provided that credit is given to both the author and the newsletter. Mailing to U.S. and possessions is by 3rd Class bulk mail. Canadian and Mexican addresses add US$2 for postage. Overseas readers add US$8 for air mail or US$2.30 for surface.

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